General Soil Map Units

The general soil map at the back of this publication shows the soil associations in this survey area. Each association has a distinctive pattern of soils, relief, and drainage. Each is a unique natural landscape. Typically, an association consists of one or more major soils and some minor soils. It is named for the major soils. The soils making up one association can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils can be identified on the map. Likewise, areas where the soils are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one association differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The descriptions and names of the soils identified on the general soil map of this county do not fully agree with those of the soils identified on the general soil maps of adjacent counties. Differences result from a better knowledge of soils, modification of series concepts, a higher or lower intensity of mapping, and variations in the extent of the soils in the counties.

Soil Descriptions

1. Parsons-Zaar-Catoosa Association

Deep and moderately deep, nearly level, somewhat poorly drained and well drained, silty and clayey soils; on uplands

This association is on ridgetops, foot slopes, and upland flats that are dissected by drainageways. Slope ranges from 0 to 2 percent.

This association makes up about 7 percent of the county. It is about 40 percent Parsons soils, 30 percent Zaar soils, 20 percent Catoosa soils, and 10 percent minor soils (fig. 3).

The deep, somewhat poorly drained Parsons soils formed in old alluvium on broad flats. Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is dark grayish brown, mottled, friable silt loam about 6 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is very dark grayish brown and dark grayish brown, mottled, very firm clay. The lower part is gray, yellowish brown, and yellowish red, very firm silty clay.

The deep, somewhat poorly drained Zaar soils formed in shale residuum on foot slopes. Typically, the surface layer is black silty clay about 8 inches thick. The subsurface layer is black, firm silty clay about 7 inches thick. The subsoil is mottled, very firm silty clay about 37 inches thick. The upper part is black, and the lower part is dark brown. The substratum to a depth of about 60 inches is dark gray and yellowish brown silty clay.

The moderately deep, well drained Catoosa soils formed in material weathered from limestone on ridgetops. Typically, the surface soil is dark brown silt loam about 12 inches thick. The subsoil is dark reddish brown, firm silty clay loam about 16 inches thick. Limestone bedrock is at a depth of about 28 inches.

The minor soils in this association are Eram, Dennis, and Shidler soils. The moderately well drained, moderately sloping Eram soils are on side slopes. The moderately well drained, gently sloping Dennis soils also are on side slopes. The shallow Shidler soils are on ridgetops.

About 60 percent of this association is used for cultivated crops, and 40 percent is pasture or range. Cash grain farming and livestock farming are the main farm enterprises. The principal crops are wheat, grain sorghum, and soybeans. Maintaining tilth and fertility and improving drainage are the main concerns in managing cropland. Maintaining or improving the stand of desirable grasses is the main concern in managing range and pasture.

2. Hepler-Osage Association

Deep, nearly level, somewhat poorly drained and poorly drained, silty and clayey soils; on terraces and flood plains

This association is on bottom land along the major streams in the county. The soils are subject to flooding. Slope ranges from 0 to 2 percent.

This association makes up about 12 percent of the county. It is about 55 percent Hepler soils, 30 percent Osage soils, and 15 percent minor soils.

The somewhat poorly drained Hepler soils formed in silty alluvium on terraces and flood plains. Typically, the

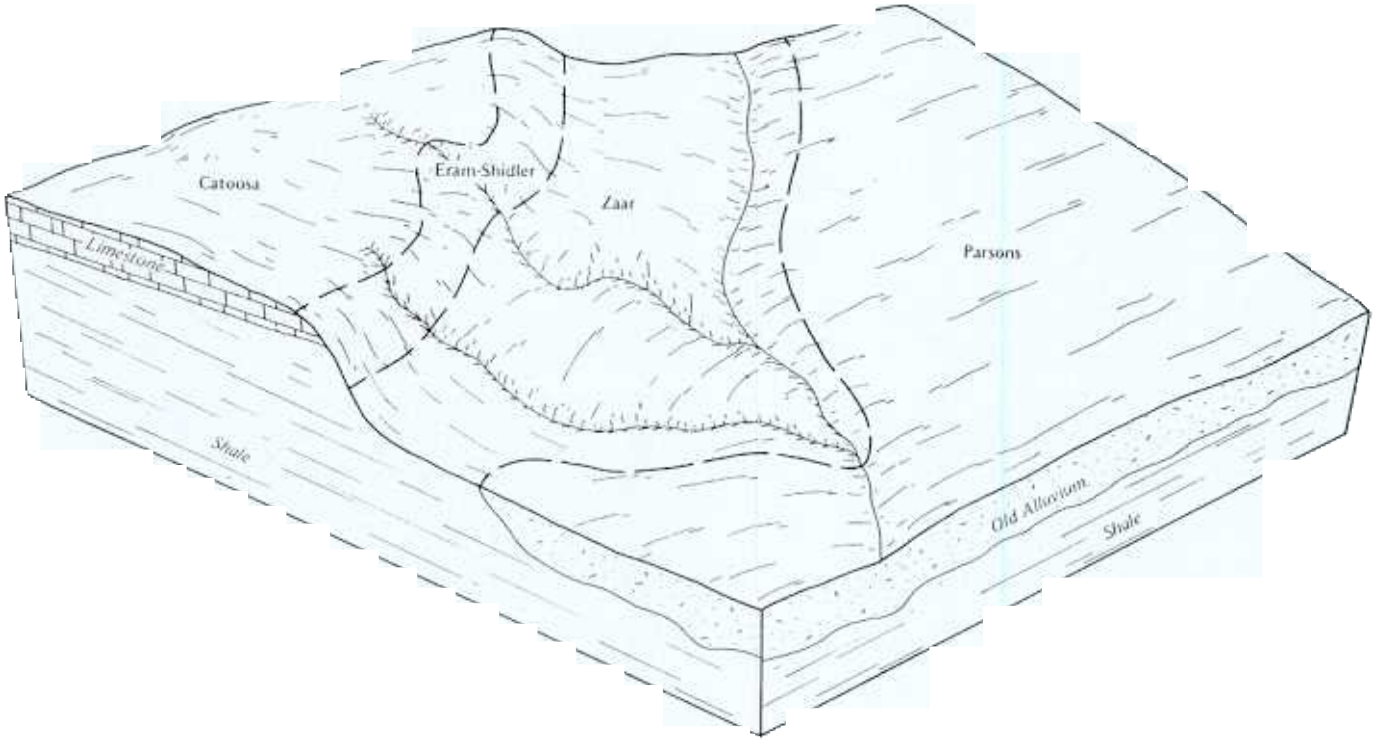

Figure 3.—Typical pattern of soils and underlying material in the Parsons-Zaar-Catoosa association.

surface layer is very dark grayish brown silt loam about 7 inches thick. The subsurface layer is dark brown and brown, friable silt loam about 16 inches thick. It is mottled in the lower part. The subsoil to a depth of more than 60 inches is mottled, firm silty clay loam. The upper part is dark grayish brown, and the lower part is grayish brown.

The poorly drained Osage soils formed in clayey alluvium on flood plains. Typically, the surface layer is black silty clay about 6 inches thick. The subsurface layer is black, very firm silty clay about 11 inches thick. It is mottled in the lower part. The subsoil to a depth of about 60 inches is very dark gray and dark gray, mottled, extremely firm clay.

The minor soils in this association are the somewhat poorly drained Lanton and moderately well drained Verdigris soils. These soils are on flood plains.

Most of this association is used for cultivated crops. A few areas are used as pasture. Hardwood trees grow along the stream channels. General cash grain farming is the main farm enterprise. The main crops are wheat, grain sorghum, and soybeans. The main concerns of management are controlling flooding, maintaining fertility and tilth, and improving drainage.

3. Parsons-Dennis Association

Deep, nearly level and gently sloping, somewhat poorly drained and moderately well drained, silty soils; on uplands

This association is on broad upland flats, ridges, and side slopes that are dissected by drainageways. Slope ranges from 0 to 3 percent.

This association makes up about 40 percent of the county. It is about 46 percent Parsons soils, 35 percent Dennis soils, and 19 percent minor soils (fig. 4).

The somewhat poorly drained Parsons soils formed in old alluvium on flats. They are nearly level. Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is dark grayish brown, mottled, friable silt loam about 6 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is very dark grayish brown and dark grayish brown, mottled, very firm clay. The lower part is gray, yellowish brown, and yellowish red, very firm silty clay.

The moderately well drained Dennis soils formed in material weathered from shale on side slopes and low knolls. They are gently sloping. Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The subsurface layer is very dark grayish brown,

friable silt loam about 4 inches thick. The subsoil extends to depth of more than 60 inches. The upper part is dark brown, mottled, friable silty clay loam. The next part is dark brown and brown, mottled, firm and very firm silty clay. The lower part is gray and strong brown, mottled, very firm silty clay and firm silty clay loam.

The minor soils in this association are Bates, Hepler, and Kanima soils. The moderately deep, well drained Bates soils are on side slopes and ridgetops. The deep, somewhat poorly drained Hepler soils are on flood plains along drainageways. Kanima soils are in areas that have been strip mined.

Most of this association is used for cultivated crops. The main concerns of management are controlling water erosion and maintaining tilth and fertility. A surface drainage system is needed in some areas of the Parsons soils.

4. Cherokee-Hepler Association

Deep, nearly level, somewhat poorly drained, silty soils; on uplands, terraces, and flood plains

This association is on broad upland flats and ridgetops that are dissected by drainageways. Slope ranges from 0 to 2 percent.

This association makes up about 5 percent of the county. It is about 82 percent Cherokee soils, 12 percent Hepler soils, and 6 percent minor soils.

The Cherokee soils formed in old alluvium on broad upland flats. Typically, the surface layer is dark grayish brown silt loam about 7 inches thick. The subsurface layer is grayish brown, mottled, friable silt loam about 7 inches thick. The subsoil is mottled, very firm clay about 33 inches thick. The upper part is very dark grayish brown, the next part is dark grayish brown, and the lower part is grayish brown. The substratum to a depth of about 60 inches is grayish brown, mottled silty clay loam.

The Hepler soils formed in silty alluvium on terraces and flood plains. Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The subsurface layer is dark brown and brown, friable silt loam about 16 inches thick. It is mottled in the lower part. The subsoil to a depth of more than 60 inches is mottled, firm silty clay loam. The upper part is dark grayish brown, and the lower part is grayish brown.

The minor soils in this association are Dennis and Parsons soils. The moderately well drained, gently sloping Dennis soils are on side slopes. Parsons soils

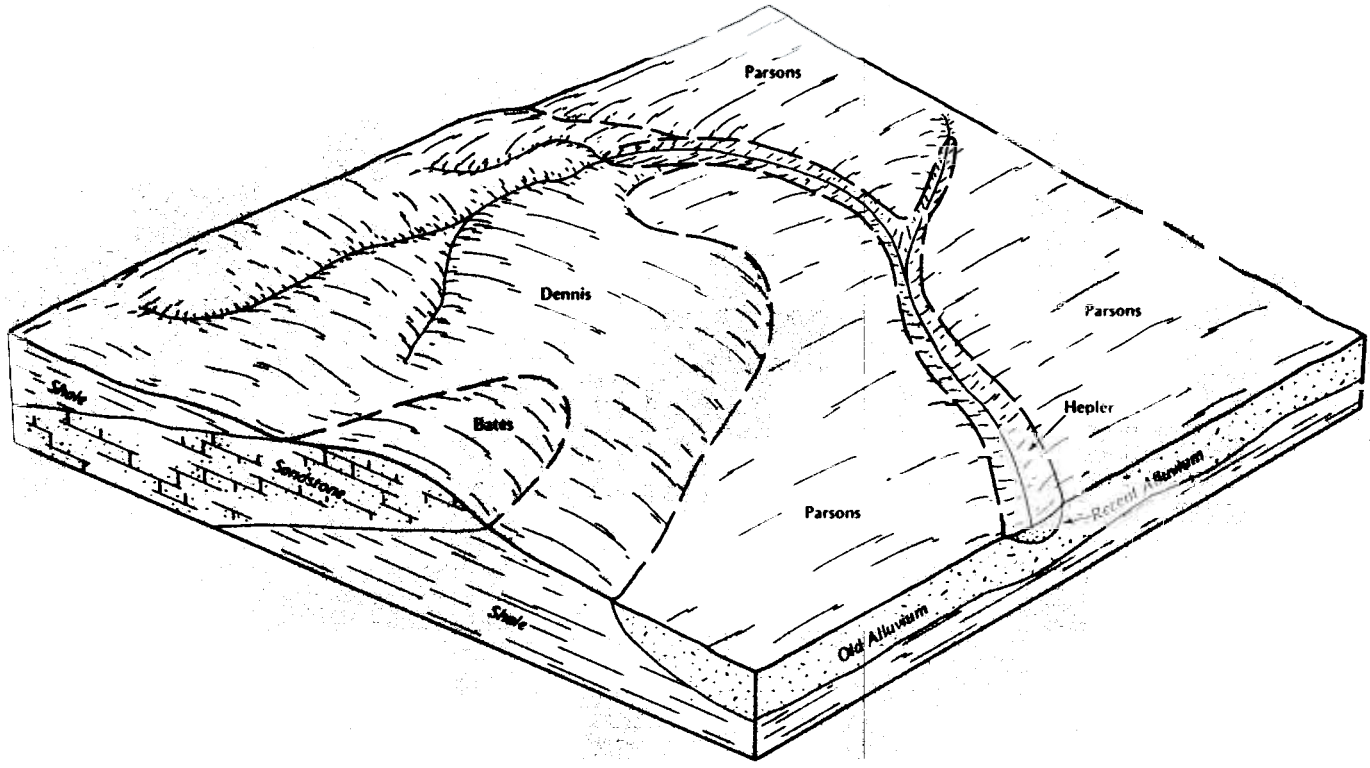

Figure 4.—Typical pattern of soils and underlying material in the Parsons-Dennis association.

have a dark surface layer. They are on broad upland flats.

Most of this association is cultivated. Some areas are used as tame pasture. The main crops are soybeans, wheat, and grain sorghum. The main management needs in cultivated areas are measures that improve drainage and maintain tilth and fertility. Increasing forage production is a concern in managing pasture.

5. Dennis-Bates-Parsons Association

Deep and moderately deep, nearly level to moderately sloping, well drained to somewhat poorly drained, silty and loamy soils; on uplands

This association is on ridges, side slopes, and flats that are dissected by drainageways. Slope ranges from 0 to 6 percent.

This association makes up about 18 percent of the county. It is about 38 percent Dennis soils, 28 percent Bates soils, 25 percent Parsons soils, and 9 percent minor soils (fig. 5).

The deep, moderately well drained Dennis soils formed in material weathered from shale on side slopes. They are gently sloping. Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The subsurface layer is very dark grayish brown, friable silt loam about 4 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark brown, mottled, friable silty clay loam. The next part is dark brown and brown, mottled, firm and very firm silty clay. The lower part is gray and strong brown, mottled, very firm silty clay and firm silty clay loam.

The moderately deep, well drained Bates soils formed in material weathered from sandstone and sandy shale on side slopes. They are gently sloping or moderately sloping. Typically, the surface soil is very dark grayish brown loam about 13 inches thick. The subsoil is about 21 inches thick. The upper part is dark brown, mottled, friable loam, and the lower part is dark brown, mottled, firm clay loam. Soft sandstone bedrock is at a depth of about 34 inches.

The deep, somewhat poorly drained Parsons soils formed in old alluvium on broad flats. They are nearly level. Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is dark grayish brown, mottled, friable silt loam about 6 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is very dark grayish brown and dark grayish brown, mottled, very firm clay.

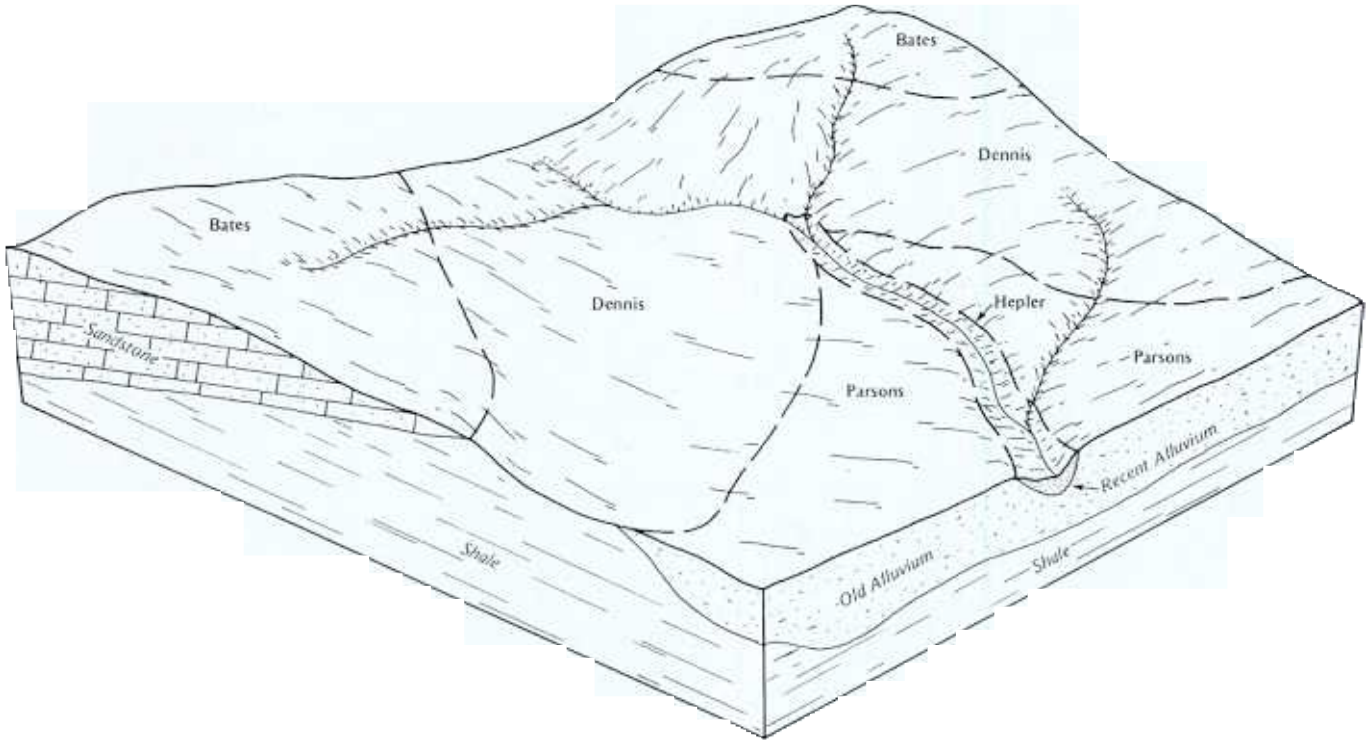

Figure 5.—Typical pattern of soils and underlying material in the Dennis-Bates-Parsons association.

The lower part is gray, yellowish brown, and yellowish red, very firm silty clay.

The minor soils in this association are Collinsville and Hepler soils. The shallow Collinsville soils are on side slopes. The somewhat poorly drained Hepler soils are on low terraces along drainageways.

About 60 percent of this association is cultivated, and 40 percent is pasture or range. Cash grain farming and livestock farming are the main farm enterprises. The principal crops are wheat, grain sorghum, and soybeans. The main management needs are measures that control erosion and maintain or improve tilth and fertility in the cultivated areas and that maintain or increase grass production on pasture or range.

6. Taloka-Dennis Association

Deep, nearly level and gently sloping, somewhat poorly drained and moderately well drained, silty soils; on uplands

This association is on broad upland flats, ridges, and side slopes that are dissected by drainageways. Slope ranges from 0 to 3 percent.

This association makes up about 6 percent of the county. It is about 40 percent Taloka soils, 35 percent Dennis soils, and 25 percent minor soils.

The somewhat poorly drained Taloka soils formed in old alluvium mantled by silty eolian sediments. They are on broad flats and are nearly level. Typically, the surface layer is very dark grayish brown silt loam about 8 inches thick. The subsurface layer is dark grayish brown and grayish brown silt loam about 13 inches thick. It is mottled in the lower part. The subsoil extends to a depth of more than 60 inches. The upper part is dark grayish brown, mottled, very firm silty clay. The next part is multicolored, very firm silty clay. The lower part is dark grayish brown, mottled, firm silty clay loam.

The moderately well drained Dennis soils formed in material weathered from shale on side slopes and low knolls. They are gently sloping. Typically, the surface layer is very dark grayish brown silt loam about 7 inches thick. The subsurface layer is very dark grayish brown, friable silt loam about 4 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark brown, mottled, friable silty clay loam. The next part is dark brown and brown, mottled, firm and very firm silty clay. The lower part is gray and strong brown, mottled, very firm silty clay and firm silty clay loam.

Minor in this association are Bates soils and mine dumps. The gently sloping and moderately sloping Bates soils are on side slopes. They are moderately deep over sandstone. The mine dumps are in scattered areas throughout the association. They are piles of chat and rock from mines.

Most of this association is cultivated. Some areas are used as tame pasture. The main crops are soybeans, wheat, and grain sorghum. Controlling erosion and maintaining fertility are the main concerns in managing cropland. A surface drainage system is needed in some areas of the Taloka soils.

7. Clarksville-Nixa-Tonti Association

Deep, gently sloping to moderately steep, somewhat excessively drained and moderately well drained, cherty and silty soils; on uplands

This association is on ridgetops and side slopes that are dissected by many drainageways. Slope ranges from 2 to 30 percent.

This association makes up about 6 percent of the county. It is about 30 percent Clarksville soils, 25 percent Nixa soils, 20 percent Tonti soils, and 25 percent minor soils (fig. 6).

The somewhat excessively drained Clarksville soils formed in material weathered from cherty limestone on side slopes. They are strongly sloping and moderately steep. Typically, the surface layer is dark grayish brown very cherty silt loam about 4 inches thick. The subsurface layer is brown, friable very cherty silt loam about 19 inches thick. The subsoil extends to a depth of more than 60 inches. The upper part is dark brown, firm very cherty silty clay loam. The lower part is yellowish red, firm extremely cherty silty clay loam.

The moderately well drained Nixa soils formed in material weathered from cherty limestone on side slopes. They are gently sloping and moderately sloping. Typically, the surface layer is dark grayish brown cherty silt loam about 5 inches thick. The subsurface layer is brown, friable very cherty silt loam about 8 inches thick. The upper part of the subsoil also is brown, friable very cherty silt loam. The next part is a fragipan of yellowish brown, mottled, firm extremely cherty silt loam. The lower part to a depth of about 60 inches is multicolored, firm extremely cherty silty clay loam.

The moderately well drained Tonti soils formed in material weathered from cherty limestone on ridgetops and side slopes. They are moderately sloping. Typically, the surface layer is brown silt loam about 9 inches thick. The subsoil extends to a depth of more than 60 inches. It is, in sequence downward, yellowish brown, friable cherty silt loam; yellowish brown, mottled, firm cherty silty clay loam; a fragipan of strong brown and light gray, firm very cherty silty clay loam; and red and reddish yellow, firm extremely cherty silty clay loam.

The minor soils in this association are Gerald, Secesh, and Waben soils. The somewhat poorly drained, nearly level Gerald soils are on ridgetops. The well drained, nearly level Secesh soils are on stream terraces and are subject to rare flooding. The well drained Waben soils are on terraces and the lower side slopes.

About 50 percent of this association is used for trees and an understory of grasses, 20 percent is cultivated, and 30 percent is pasture, hayland, or range. Livestock farming and cash grain farming are the main farm

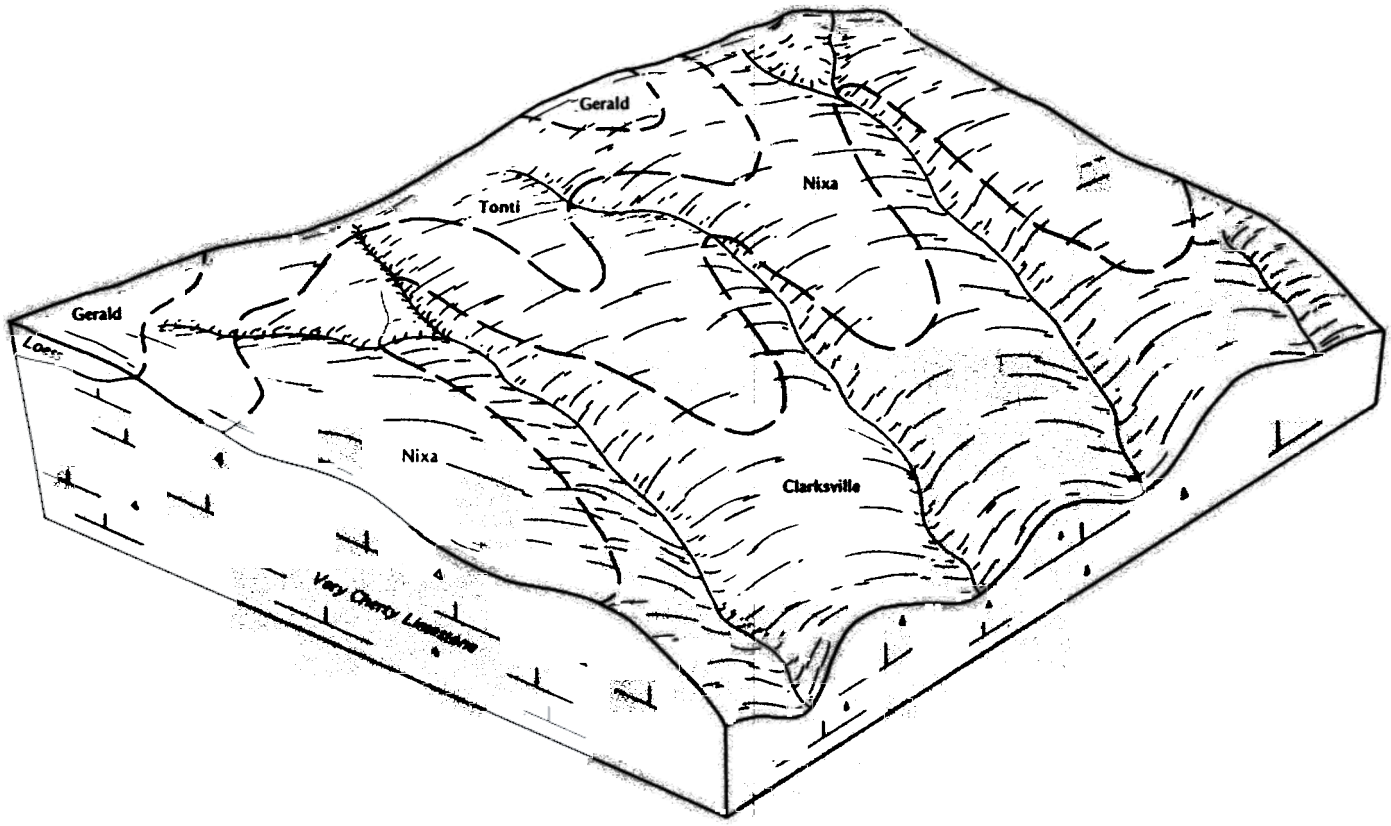

Figure 6.—Typical pattern of soils and underlying material in the Clarksville-Nixa-Tonti association.

enterprises. The principal crops are wheat, grain sorghum, and soybeans. The main management needs are measures that maintain or increase grass or tree production on range or pasture.

8. Kanima Association

Deep, moderately sloping to steep, well drained, shaly and silty soils; on uplands

This association consists of rough, irregularly shaped piles, ridges, and hills of mine spoil. The mine spoil includes soil material and fragments of sandstone and coal. Slope ranges from 3 to 50 percent.

This association makes up about 6 percent of the county. It is about 82 percent Kanima soils, 8 percent water areas, and 10 percent minor soils.

Typically, the surface layer of the Kanima soils is very dark grayish brown shaly silty clay loam about 6 inches thick. The substratum to a depth of about 60 inches is dark brown extremely shaly silty clay loam. In some areas the soil has a subsoil of extremely shaly silty clay or silty clay.

The minor soils in this association are Parsons and Dennis soils in undisturbed areas. Parsons soils are nearly level and are on broad flats. Dennis soils are gently sloping and are on side slopes.

This association is used mainly as wildlife habitat, pasture, and recreation areas. In most areas the Kanima soils are scantly covered with trees, brush, weeds, and undesirable grasses. About one-third of the association supports tame grasses. Clearing brush and smoothing the dumps and seeding them to adapted grasses improve the suitability of the Kanima soils for pasture.